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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/692,801
Filing Date: October 27, 2003
Appellant(s): WATANABE ET AL.

Gregory W. Harper (55,248)
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 11/15/07 appealing from the Office action mailed 2/20/07.

Art Unit: 3681

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is incorrect. A correct statement of the status of the claims is as follows:

This appeal involves claims 1-46.

Claim 47 has been canceled.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

NELSON (US 6,723,174 Issued 4/20/04).

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

1. Claims 1-46 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention

- 1.1. With respect to claims 1-2, 12-13, 24-25, and 35-36, the phrase, “container containing objects positioned therein from the first process” renders the claim indefinite because the phrase amounts to an indirect limitation of the first process, i.e., objects are positioned in the container during the first process. The first process is recited only functionally in the preamble, i.e., ...for conveying objects from a first process. Further limitations directed toward the steps of the first process render the scope of the claim indefinite because it cannot be determined whether Applicant is attempting to positively recite the first process and its steps in the claim or if the first process is related merely to the intended use of the method or apparatus for the respective claims. Furthermore, those claims directed toward an apparatus should not positively recite steps of a process because doing so would improperly span more than one statutory class of invention.

- 1.2. With respect to claims 1-2, and 12-13, Applicant is improperly attempting to recited process steps, e.g., “holding and taking out a container,” “conveying an positioning the held container,” “holding and taking out an object,” within an apparatus claim. It is unclear whether Applicant is attempting to recite an apparatus or a process. Applicant may not direct a claim toward more than one statutory class of invention.

2. Claim(s) 1-46 is/are rejected under 35 U.S.C. 102(b) as being anticipated by NELSON (US 6,723,174).
 - 2.1. With respect to claim 1, NELSON (Figs 32-34) discloses a first robot having an articulated arm (912) and hand (910) for holding and taking out a container and conveying the container to a predetermined position (900), a second robot for taking out an object contained in the container (970).
 - 2.2. With respect to claim 2, NELSON discloses a first robot having an articulated arm (912) and hand (910) for holding and taking out a container and conveying the container to a predetermined position, a second robot with a sensor (980) for taking out an object contained in the container.
 - 2.3. With respect to claim 3, NELSON additionally discloses the first robot changing position of the container.
 - 2.4. With respect to claim 4, NELSON additionally discloses the first robot changing position of the container.
 - 2.5. With respect to claim 5/1 and 5/2, NELSON additionally discloses the first robot having a sensor (714).
 - 2.6. With respect to claim 6/1 and 6/2, NELSON additionally discloses a signal indicating the number of objects remaining in the container. (Col. 14 Li. 41-58)
 - 2.7. With respect to claim 7/1 and 7/2, NELSON additionally discloses a signal output if the number of objects remaining in the container satisfies a predetermined condition.
 - 2.8. With respect to claim 8/1 and 8/2, NELSON additionally discloses a second robot notifying the first.

- 2.9. With respect to claim 9/1 and 9/2, NELSON additionally discloses the robot notifying the process.
- 2.10. With respect to claim 10/1 and 10/2, NELSON additionally discloses the robot placing objects on a temporary placing table (990).
- 2.11. With respect to claim 11/1 and 11/2, NELSON additionally discloses the first robot changing position of the container to assist the second robot to eliminate an abnormality which is unable to be eliminated by the second robot (826).
- 2.12. With respect to claim 12, NELSON discloses a first robot having an articulated arm (912) and hand (910) for holding and taking out a container and conveying the container to a predetermined position (900), a second robot (970) for placing an object in the container, the first robot conveying the container to a second process.
- 2.13. With respect to claim 13, NELSON discloses a first robot having an articulated arm (912) and hand (910) for holding and taking out a container and conveying the container to a predetermined position, a second robot with a sensor for placing an object in the container, the first robot conveying the container to a second process.
- 2.14. With respect to claim 14, NELSON additionally discloses the first robot changing position of the container.
- 2.15. With respect to claim 15, NELSON additionally discloses the first robot changing position of the container.
- 2.16. With respect to claim 16/12 and 16/13, NELSON additionally discloses the first robot having a sensor.

- 2.17. With respect to claim 17/12 and 17/13, NELSON additionally discloses a signal indicating the number of objects remaining in the container.
- 2.18. With respect to claim 18/12 and 18/13, NELSON additionally discloses a signal output if the number of objects remaining in the container satisfies a predetermined condition.
- 2.19. With respect to claim 19/12 and 19/13, NELSON additionally discloses a second robot notifying the first.
- 2.20. With respect to claim 20/12 and 20/13, NELSON additionally discloses the robot removing objects on a temporary placing table.
- 2.21. With respect to claim 21/12 and 21/13, NELSON additionally discloses the first robot changing position of the container to assist the second robot to eliminate an abnormality which is unable to be eliminated by the second robot.
- 2.22. With respect to claim 22, NELSON additionally discloses a visual sensor (Col. 14 Li 27).
- 2.23. With respect to claim 23, NELSON additionally discloses a three-dimensional position sensor.
- 2.24. With respect to claim 24, NELSON discloses holding and taking out a container containing objects by a first robot having an articulated arm (912) and hand (910) , conveying and positioning the container, and holding and taking out an object and conveying the object to a process using a second robot.
- 2.25. With respect to claim 25, NELSON discloses holding and taking out a container containing objects by a first robot having an articulated arm (912) and hand (910),

conveying and positioning the container, holding and taking out an object and conveying the object to a process using a second robot and a sensor.

2.26. With respect to claim 26/24 and 26/25, NELSON additionally discloses the first robot changing position of the container.

2.27. With respect to claim 27/24 and 27/25, NELSON additionally discloses the first robot changing position of the container.

2.28. With respect to claim 28/24 and 28/25, NELSON additionally discloses holding the container based on the detected position.

2.29. With respect to claim 29/24 and 29/25, NELSON additionally discloses a signal indicating the number of objects remaining in the container.

2.30. With respect to claim 30/24 and 30/25, NELSON additionally discloses a signal output if the number of objects remaining in the container satisfies a predetermined condition.

2.31. With respect to claim 31/24 and 31/25, NELSON additionally discloses notifying the first robot that the second holds the object.

2.32. With respect to claim 32/24 and 32/25, NELSON additionally discloses the robot notifying the process.

2.33. With respect to claim 33/24 and 33/25, NELSON additionally discloses the robot placing objects on a temporary placing table.

2.34. With respect to claim 34/24 and 34/25, NELSON additionally discloses the first robot changing position of the container to assist the second robot to eliminate an abnormality which is unable to be eliminated by the second robot.

- 2.35. With respect to claim 35, NELSON discloses holding and taking out a container from the second process, conveying and positioning the held container using a first robot having an articulated arm (912) and hand (910), sequentially holding and taking out objects from the first process, placing the objects in the container using the second robot and conveying the container using the first robot.
- 2.36. With respect to claim 36, NELSON discloses holding and taking out a container from the second process, conveying and positioning the held container using a first robot having an articulated arm (912) and hand (910), sequentially holding and taking out objects from the first process, placing the objects in the container using the second robot, using a sensor, and conveying the container using the first robot.
- 2.37. With respect to claim 37, NELSON additionally discloses the first robot changing position of the container.
- 2.38. With respect to claim 38, NELSON additionally discloses the first robot changing position of the container.
- 2.39. With respect to claim 39/35 and 39/36, NELSON additionally discloses recognizing a position by a sensor.
- 2.40. With respect to claim 40/35 and 40/36, NELSON additionally discloses a signal indicating the number of objects remaining in the container.
- 2.41. With respect to claim 41/35 and 41/36, NELSON additionally discloses a signal output if the number of objects remaining in the container satisfies a predetermined condition.

2.42. With respect to claim 42/35 and 42/36, NELSON additionally discloses a notifying the first robot that the object has been placed in the container.

2.43. With respect to claim 43/35 and 43/36, NELSON additionally discloses the robot removing objects on a temporary placing table.

2.44. With respect to claim 44/35 and 44/36, NELSON additionally discloses the first robot changing position of the container to assist the second robot to eliminate an abnormality which is unable to be eliminated by the second robot.

2.45. With respect to claim 45/25 and 45/36, NELSON additionally discloses a visual sensor.

2.46. With respect to claim 46/25 and 46/36, NELSON additionally discloses a three-dimensional position sensor.

(10) Response to Argument

1. Applicant argues (Bi) that NELSON does not anticipate claims 1, 2, 12, 13, 24, 25, 35, and 36 because NELSON does not disclose an "articulated arm." This argument is not persuasive for the following reason(s):

1.1. The Examiner agrees with Applicant's first premise that the term "articulated arm," as given its ordinary meaning, is an arm requiring a joint or joints (pg. 13). The Examiner also agrees with Applicant's second premise that an "arm," as given its ordinary meaning, is a part similar to a human arm such as the forelimb of an animal or a projecting part in a machine (pg. 13). These premises, however, do not support the conclusion that an articulated arm must therefore include a joint of the type found in a human arm. In arriving at this conclusion Applicant is requiring that human characteristics be imparted to term

"articulated" instead of merely the term "arm." Applicant is essentially asserting that the phrase "articulated arm" has the same meaning as a phrase such as, "an arm articulated by a joint of the type found in a human arm." The Examiner disagrees with this assertion because Applicant is imposing limitations that are not recited in the claims. Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. An "arm" may be "articulated" by a means different from the type found in a human, thereby forming an "articulated arm" within the broadest reasonable interpretation of that term. An arm having a telescoping or sliding joint, like the one disclosed in NELSON (912), therefore constitutes an "articulated arm" within the broadest reasonable interpretation of that term.

If Applicant wished to require a joint of the type commonly found in human arms Applicant could have easily employed terms commonly used in the art such as "wrist" or "elbow" joint which each define joints having three or one axes of pivotal freedom, respectively (See e.g., NELSON at Col. 11 Li 44), and would clearly define arms not articulated by a sliding joint.

2. Applicant argues (Bii) that NELSON does not anticipate claims 6, 17, 29, and 40 because NELSON fails to disclose "[outputting] a signal indicating the number of objects taken out from the container or the number of objects remaining in the container." This argument is not persuasive for the following reason(s):

- 2.1. Applicant asserts that NELSON fails to meet this limitation because the signal output by NELSON is only indicative of whether or not all wafers have been removed. This type of signal, however, meets the claimed limitation as given its broadest reasonable

interpretation. Firstly, if the signal output by NELSON indicates that all wafers have been removed, the signal indicates "the number of objects remaining in the container," i.e., zero, and, therefore meets the latter scenario of the alternative claim limitation. Additionally, if the signal indicates the presence of at least one wafer, the signal also indicates "the number of objects remaining in the container," i.e., a number greater than zero. Providing an 'indication' of a number does not necessarily require provision of a specific numeric value. The latter scenario of the alternative claim limitation is, therefore, again met by this signal. Furthermore, the number of objects that may initially be contained in the NELSON container (standardized at 13 or 25), like Applicant's (e.g., Ye) is a known value. Based on this known value a signal indicating that all wafers have been removed indicates "the number of objects taken out," i.e., the number initially present, thereby, meeting the first scenario of the alternative limitation. A signal simply indicating the presence or absence of an object, on its own, or coupled with known conditions (the initial number of objects in the container), therefore, is a signal "indicating the number of objects taken out from the container or the number of objects remaining in the container" within the broadest reasonable interpretation of that term.

The chosen claim limitations do not patentably distinguish from NELSON because they do not necessarily require, for example, that the number of objects taken out of the container is counted (Fig. 7 Step D6) and a signal representing the tally of this count (y) or a signal representing the tally of this count subtracted from the initial number of objects in the container ($Y_e - y$) is output. If Applicant wished to make such a requirement, this, or

similar language, could have easily been set forth. Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims.

3. Applicant argues (C) that claims 1, 2, 12 and 13 comply with the requirements set forth in 35 USC 112 because Applicant is not reciting process steps within an apparatus claim, merely functional language. This argument is not persuasive for the following reason(s):

- 3.1. In support of this argument Applicant has merely stated relevant principals of law but has neglected to apply these principals to any of the specific language objected to by the Examiner. The Examiner does not dispute that an apparatus may be properly defined in a claim by the recitation of functional limitations. In this instance, however, the Examiner cannot determine what limitations are positively recited and must be shown in the prior art to meet the claim, and what limitations constitute functional language and/or intended use recitations which the prior art must only possess the capability of performing in order to meet.

- 3.1.1. With respect to section 1.1. of the rejections under 35 USC 112 2nd paragraph above, the Examiner cannot determine if a first process where objects are positioned in a container is required to meet the limitations of the claim and, therefore, requests clarification. The Examiner also notes, if the claim were interpreted as requiring such a step the claim might not be proper under 35 USC 101 because it would traverse more than one statutory class of invention.

- 3.1.2. With respect to section 1.2 of the rejections under 35 USC 112 2nd paragraph above, the Examiner cannot determine if, to meet the claim limitations, the robots must actually perform the recited steps or if the robots need only be capable of

performing the recited steps. The Examiner also notes that if it is Applicant's intent to require the actual performance of these steps, the claims may not be proper under 35 USC 101 because they would traverse more than one statutory class of invention. The fact that the language in the apparatus claims is exactly the same as the language employed in the method claims is indicative of the fact that the recited language may be interpreted as the recitation of process steps. Clarification may be provided by simply inserting language clearly indicative of the functional nature of the recitations, e.g., "for holding." In the alternative, it is conceivable that clarification may be provided simply by clearly stating on the record what limitations Applicant perceives as defining merely functions the robots must be capable of performing as distinguished from actual structural recitations required by the apparatus claim. Absent such clarification the Examiner is unsure exactly what the prior art much disclose to meet the limitations of the apparatus claims.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

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For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Charles Greenhut /C. N. G./

Examiner, Art Unit 3652

Conferees:

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